

Development and validation of a short tool to assess the awareness of hypertensive disorders of pregnancy: a cross-sectional study among pregnant women in Lebanon



Jinan Kresht, MS; Georges Hatem, PhD; Nathalie Lahoud, PhD; Salam Zein, PhD; Dalia Khachman, PhD

BACKGROUND: Hypertensive disorders of pregnancy (HDPs) are responsible for most perinatal and fetal mortality. Few programs are patient-centered during pregnancy, thereby increasing the risks of misinformation and misconceptions among pregnant women and, as a result, malpractices.

OBJECTIVE: This study aims to develop and validate a form to assess the knowledge and attitudes of pregnant women about HDPs.

STUDY DESIGN: A cross-sectional pilot study was conducted over 4 months, targeting 135 pregnant women from 5 obstetrics and gynecology clinics. A self-reported survey was developed and validated, and an awareness score was generated.

RESULTS: The mean maternal age of the participants was 27.3 (5.3) years. About 80% of the participants reported that they monitored their weight during pregnancy, and 70.4% monitored their blood pressure, out of which 73.8% performed it at the doctor's clinic only. Overall, participants had a total score of 16.9 (3.1) over 25 with higher attitude scores than knowledge scores. Less than half of the patients (45.2%) knew the cut-off for hypertension. With respect to knowledge statements, higher scores were noted for statements related to the symptoms of HDPs, and lower scores were reported for statements related to some HDP complications. Older women and those who monitored their blood pressure during pregnancy had significantly higher awareness scores. Those working had higher awareness of HDPs (67.4%), whereas about half of nonworkers (53.9%) showed lower awareness scores ($P=.019$).

CONCLUSION: Pregnant women had moderate awareness of HDPs. The short 25-item tool developed in the present study can be used in obstetric clinics to explore the awareness of women of HDPs.

Key words: awareness, hypertensive disorders of pregnancy, patient education, tool, validation

Introduction

Hypertensive disorders of pregnancy (HDPs) can occur among women during pregnancy and are responsible for most perinatal and fetal mortality.^{1,2} The prevalence of hypertensive disorders during pregnancy is high (16.8%) and can adversely affect the quality of life of women during and after pregnancy.³

Research shows a prevalence of HDPs ranging between 2.4% and 8.6%.^{4–8} Prediction models of gestational hypertension were developed⁹; however, they do not apply to low-income and middle-income countries. In these countries, doctors are the primary source of diagnosis, and most educational campaigns target them to improve the clinical

assessment of diseases during pregnancy.^{10,11} Only a few programs are patient-centered during pregnancy,¹² making meeting each patient's unique needs more challenging than taking a one-size-fits-all approach. This may induce misinformation and misconceptions among pregnant women, resulting in malpractice. Among others, believing

From the Clinical and Epidemiological Research Laboratory, Faculty of Pharmacy, Lebanese University, Hadat, Lebanon (Ms Kresht and Drs Hatem, Lahoud, Zein, and Khachman)

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The study protocol, questionnaire, and consent form were reviewed and approved by the institutional review board of the Lebanese University Faculty of Pharmacy. Written informed consent was sought from every participant.

The Authors declare that there is no conflict of interest.

Authors' contributions. GH: Conceptualization, formal analysis, Validation, and Writing-original draft; JK: Data curation, methodology, and writing-original draft; NL: Methodology, formal analysis, writing-original draft; SZ: Conceptualization, Methodology, and Writing-original draft; DK: Conceptualization, data curation, methodology, Writing-review, and editing; All authors read and approved the final manuscript.

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Corresponding author: Georges Hatem, PharmD, PhD. georges.r.hatem@gmail.com

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Why was this study conducted?

Education campaigns were postponed during the past 2 years, and primary care was prioritized. To allow better-informed decisions and targeted actions, a short form to assess the awareness of pregnant women about hypertensive disorders of pregnancy is crucial to address patients' specific needs and allow early detection of hypertensive disorders through regular prenatal check-ups and lifestyle modifications such as blood pressure monitoring.

Key findings

Pregnant women in Lebanon had moderate awareness of hypertensive disorders of pregnancy. A high proportion of patients answered with "I don't Know" to several knowledge questions. Higher awareness was associated with maternal age, working status, and self-monitoring of blood pressure.

What does this add to what is known?

Research reported an incomplete knowledge of pregnant women about hypertensive disorders. This short 25-item tool can be applied in clinics to assess women's knowledge and consequently develop educational plans reflecting their needs and thus preventing complications such as preeclampsia and early delivery.

that HDPs are not serious can increase the risk of complications such as preeclampsia, placental abruption, premature delivery, and low birth weight; the lack of regular blood pressure monitoring can prevent timely interventions, and that lifestyle changes alone can manage HDPs though medication may also be necessary.¹³

Modifiable risk factors such as smoking, obesity, and sedentarism can increase the odds of HDPs.¹⁴ Acquiring excessive weight during pregnancy and preexisting hypertension or diabetes were also found to be associated with HDPs and impacted fetal outcomes.¹⁵ Complications such as early delivery and low birth weight can occur among patients with HDPs.¹⁶ Uncontrolled HDPs can lead to maternal and fetal death and the persistence of hypertension after delivery.¹⁷ The awareness of these factors can help reduce adverse health outcomes and ensure a better quality of life during and after pregnancy.¹⁸

Many observational studies explored the awareness of pregnant women of HDPs,^{19–21} but no structured tool is available to assess such awareness. Education campaigns were postponed during the past 2 years, and primary care was prioritized.²² In developing countries such as Lebanon, awareness of

pregnancy hypertension is often limited because of various factors such as lack of access to healthcare facilities, low levels of education and awareness among women, and limited availability of healthcare resources.^{22–24} One of the significant challenges is the lack of adequate antenatal care services.²⁵ As a result, many cases of pregnancy hypertension go undiagnosed until they become severe and life-threatening.²⁶ Furthermore, cultural and social beliefs may play a role in limiting awareness of HDPs.²⁷ For example, some women may believe that high blood pressure during pregnancy is normal and do not seek medical attention until complications arise. To allow better-informed decisions and targeted actions, this pilot study aims to develop and validate a short form to assess the knowledge and attitudes of pregnant women about hypertensive disorders of pregnancy. The long-term objective of this study is to provide a practical tool for pregnant women to assess those more susceptible and develop plans accordingly.

Materials and Methods**Study design and population**

To achieve the intended objectives, a cross-sectional pilot study was conducted over 4 months (November 2021–February 2022), targeting

pregnant women from 5 obstetrics and gynecology clinics. Participants were asked to participate in the study with no criteria based on race, ethnicity, or gestational age. Those with a history of hypertension or preeclampsia were excluded. Accordingly, the study sample included 135 participants. This work has been reported in line with the STROCSS criteria.²⁸

Data collection

A survey was developed after a literature review.^{29–32} This review was conducted in accordance with Preferred Reporting Items for Systematic Review and Meta-Analysis (PRISMA) 2020 statement by searching PubMed and using defined search terms ([Supplementary Materials](#)). The screening process was carried out in 3 main steps. First, the articles were classified based on their title, abstract, and keywords. Afterward, the articles that fit the requisite criteria were evaluated through full-text interpretation to determine their eligibility and method comparability. Then data were extracted from the selected articles by 3 authors independently (flow chart available in [Supplementary Materials](#)). For the final data extraction and synthesis, 51 studies were identified and analyzed. In each of the 3 steps, conflicts were resolved by discussions. Fifty-five potential statements were generated accordingly, of which 21 were excluded based on 5 gynecologists' opinions, and 2 were added. As a result, 36 statements were used for this pilot study. The survey was available in Arabic, which is the official language in Lebanon. The survey was initially piloted with 30 patients, and questions were adjusted to improve clarity. It was then readministered 3 weeks after to the same patients to test its reliability. The percentage agreement between the 2 items for each question was acceptable. Two pharmacists approached pregnant women during the clinics' opening hours. They explained the study objectives and asked them to complete the survey (on average, 15 minutes).

Baseline characteristics of the participants

The survey included questions about the baseline characteristics of the participants (age, area of residence [urban or rural], and level of education [vocational degree, high school or less, and university or more]). Information about the employment status (employed or unemployed), medical insurance, and gestational age was also collected. With regard to their medical history, the women were asked if it was their first pregnancy, if they had a history of abortion, comorbidities, and a family history of hypertension. They also reported if they had stress and if they had any stress-related complications (resulting from physical or mental pressures and inexistent in normal states). These complications included sleeping problems (eg, insomnia, sleeping difficulties, apnea, low quality sleep, and short sleep time), headaches (tension/anxiety headaches), and eating disorders (extreme reduction of food intake or extreme overeating, or feelings of extreme distress or concern about body weight or shape).

Lifestyle habits and practices of pregnant women during pregnancy

This section collected information about participants' smoking status (cigarettes or Nargileh) before and during pregnancy. Nargileh, also called shisha or waterpipe, is considered a common type of smoking in Lebanon. Women were also asked if they consumed coffee, tea, and soft drinks during pregnancy and if they followed particular dietary recommendations. They also reported whether they practiced sports regularly (more than 30 minutes per day) and consumed more sweets and fast food than before pregnancy. The sports were defined as any moderate-intensity physical activity such as walking, cycling, swimming, aerobics, dancing, and yoga. Attitudes of pregnant women and self-practices were collected by assessing their comportment for different scenarios. Participants were asked to report their self-adherence to pregnancy medication, frequency of visits to the doctor (at least once a month), and whether or

not they monitored their weight and blood pressure during pregnancy.

Knowledge and attitudes of pregnant women about hypertensive disorders of pregnancy

Thirty-six statements were provided to which women had to answer either "yes", "No" or "I don't Know". Of these statements, 25 were retained because of positive inter-item correlation (15 knowledge statements and 10 behavior statements), and the other statements were eliminated one by one after testing for reliability and computing the effect of each statement on the internal consistency. The assessment of patients' knowledge was retrieved from the knowledge of the characteristics of the disease, risk factors, and complications. Behavior assessment was based on answers to lifestyle habits to control the

HDPs, such as weight and dietary management, clinical monitoring, smoking cessation, and physical activity. The women had total scores if they linked the statement to the correct answer.

Statistical analysis

Statistical analyses were performed using Statistical Package for Social Sciences Version 27 (SPSS Inc, Chicago, Illinois). Maternal and gestational age and the total awareness scores of patients were presented using means and standard deviations. Categorical variables were presented using frequencies and percentages. To ensure the reliability of the index, the retesting showed good intraclass correlation (a value of 0.60 was considered marginal, 0.70 was considered good, and 0.80 was considered high). The index had acceptable reliability (Cronbach's alpha score

TABLE 1
Distribution of the baseline characteristics of the patients

General characteristics		Total (N=135) Frequency (%)
Age (years)	Mean (SD)	27.3 (5.3)
Area of residence	Urban area	82 (60.7%)
	Rural area	53 (39.3%)
Level of education	Vocational degree	35 (25.9%)
	High school or less	38 (28.1%)
	University or more	62 (45.9%)
Working status	Works	46 (34.1%)
	Does not work	89 (65.9%)
Medical Insurance	Yes	109 (80.7%)
Gestational Age (weeks)	Mean (SD)	21.7 (10.9)
Medical history		Frequency (%)
First pregnancy	Yes	61 (45.2%)
Abortion history	Yes	40 (29.6%)
Gestational diabetes (Previous or current)	Yes	5 (3.7%)
Comorbidities	Yes	16 (11.9%)
Family history of hypertension	Yes	79 (58.5%)
Stress	Yes	46 (34.1%)
Stress-induced sleeping problems (N=46)	Yes	20 (43.5%)
Stress-induced headaches (N=46)	Yes	21 (45.7%)
Stress-induced eating disorders (N=46)	Yes	19 (41.3%)

Results are given in frequency (%: percentage) or Mean (SD: Standard Deviation).

of 0.651). The total awareness score was dichotomized (lower awareness and higher awareness), taking the mean as the cut-off point. A bivariate analysis was conducted, taking the general characteristics of the participants as independent variables and the level of awareness as the dependent variable. The Chi-square or Fisher exact tests were used to compare percentages between associate categorical variables. The unpaired student t-test or Mann-Whitney tests were used for the comparison of data between 2 different groups. A *P*-value <.05 was considered statistically significant.

Ethical considerations

This study used a survey for data collection without any invasive procedures or interventions. The study protocol, survey, and consent form were reviewed and approved by the institutional review board of the Faculty of Pharmacy of the Lebanese University, Hadat, Lebanon. Data were completely anonymous and nonidentifiable; data storage followed the university's general data protection regulation guidelines, and written informed consent was obtained from each participant.

Results

Baseline characteristics of the patients

Overall, 163 patients were approached and 135 (82.8%) agreed to participate in the study. Table 1 presents the baseline characteristics of patients. The mean maternal age of the participants was 27.3 (5.3) years. Approximately two-thirds (60.7%) of the participants lived in urban areas and did not work (65.9%). Regarding education level, 25.9% had a vocational degree, 28.1% had a high school degree or less and 45.9% had a university degree or more. Most pregnant women (80.7%) had medical insurance and the mean gestational age was 21.7 (10.9) weeks. Almost 45% of patients reported that it was their first pregnancy and 29.6% had an abortion history. More than half of the patients (58.5%) had a family history of hypertension and 34.1% said they had stress during pregnancy.

TABLE 2

Lifestyle habits and practices of pregnant women during pregnancy

Lifestyle habits during pregnancy		Total (N=135) Frequency (%)
Smoking status (before pregnancy)	Active smoker	57 (42.2%)
	Non-smoker	78 (57.8%)
Smoking status (during pregnancy)	Active smoker	17 (12.6%)
	Non-smoker	118 (87.4%)
Coffee consumption	Yes	45 (33.3%)
Tea consumption	Yes	93 (68.9%)
Soft drinks consumption	Yes	90 (66.7%)
Regular physical activity	Yes	27 (20.0%)
Special diet during pregnancy	Yes	26 (19.3%)
Higher fast-food and sweets consumption	Yes	88 (65.2%)
Practices		Frequency (%)
Self-reported adherence to pregnancy medication	Yes	109 (82.0%)
Regular visits to the doctor (at least once a month)	Yes	127 (94.1%)
Weight monitoring during pregnancy	Yes	109 (80.7%)
Blood pressure monitoring during pregnancy	Yes	95 (70.4%)
Blood pressure monitoring location (N=65)	At home	1 (1.5%)
	At the doctor's clinic	48 (73.8%)
	At home and clinic	16 (11.9%)

Results are given in frequency (%: percentage)

Lifestyle habits and practices of pregnant women during pregnancy

The lifestyle habits and practices of the participants during pregnancy are presented in Table 2. About 42% of women were active smokers before pregnancy, and most (87.4%) did not smoke during pregnancy. A third of the participants were coffee consumers, 68.9% were tea drinkers, and 66.7% drank soft drinks during their pregnancy. Only 20% of the sample performed regular physical activity and 19.3% followed a special diet. Almost two-thirds (65.2%) reported higher consumption of fast food and sweets than before pregnancy. The pregnant women self-reported a high adherence (82%) to the medication prescribed by their doctors and 94.1% visited their doctor at least once every month. Approximately 80% of the sample reported that they monitored their weight during pregnancy; and 70.4% monitored their blood pressure, out of

which 73.8% performed it at the doctor's clinic only.

Knowledge and attitudes of pregnant women about hypertensive disorders of pregnancy

The mean scores of individual patients' knowledge and attitudes for each statement are presented in Table 3. Overall, participants had a total score of 16.9 (3.1) over 25 with higher attitude scores than knowledge scores. Less than half of patients (45.2%) knew the cut-off for hypertension. With respect to knowledge statements, higher scores were noted for statements related to the symptoms of HDPs: persistent headaches (0.88), double or blurred vision (0.77), and swelling (0.66). Lower scores were reported for statements related to some HDP complications, such as oliguria (0.15) and low birth weight (0.22). Many women answered with "Do not know" to other complications such as

TABLE 3**Knowledge and attitudes of pregnant women regarding pregnancy-induced hypertension**

Knowledge statements	Yes Frequency (%)	No Frequency (%)	Do not know Frequency (%)	Score /1 Mean
Blood pressure \geq 140/90 mmHg	61 (45.2%)	74 (54.8%)	—	0.45
Any woman can have PIH	90 (66.7%)	31 (23.0%)	14 (10.4%)	0.67
Maternal age is a risk factor for PIH	67 (49.6%)	28 (20.7%)	40 (29.6%)	0.50
Increased BMI is a risk factor for PIH	103 (76.3%)	14 (10.4%)	18 (13.3%)	0.76
Family history of pre-eclampsia is a risk factor	104 (77.0%)	16 (11.9%)	15 (11.1%)	0.77
Diabetes is a risk factor for PIH	75 (55.6%)	16 (11.9%)	44 (32.6%)	0.56
Persistent headaches are symptoms of PIH	119 (88.1%)	4 (3.0%)	12 (8.9%)	0.88
Swelling is a symptom of PIH	89 (65.9%)	25 (18.5%)	21 (15.6%)	0.66
Double or blurred vision is a symptom of PIH	104 (77.0%)	8 (5.9%)	23 (17.0%)	0.77
Nausea is a symptom of PIH	73 (54.1%)	30 (22.2%)	32 (23.7%)	0.54
PIH can cause maternal or fetal mortality	90 (66.7%)	13 (9.6%)	32 (23.7%)	0.67
PIH can cause oliguria	20 (14.8%)	36 (26.7%)	79 (58.5%)	0.15
PIH can cause placenta abruption	105 (77.8%)	8 (5.9%)	22 (16.3%)	0.78
PIH can lead to low birth weight	30 (22.2%)	22 (16.3%)	83 (61.5%)	0.22
PIH can cause preterm birth	72 (53.3%)	9 (6.7%)	54 (40.0%)	0.53
Attitudes statements	Frequency (%)	Frequency (%)	Frequency (%)	Score /1 Mean
PIH can be prevented with good lifestyle habits	77 (57.0%)	39 (28.9%)	19 (14.1%)	0.57
Pregnant women with PIH should monitor their blood pressure more frequently	133 (98.5%)	2 (1.5%)	—	0.99
Pregnant women with PIH require additional clinical follow-up	106 (78.5%)	26 (19.3%)	3 (2.2%)	0.79
Physical activity can help control PIH	106 (78.5%)	14 (10.4%)	15 (11.1%)	0.79
Dietary interventions can help control PIH	120 (88.9%)	11 (8.1%)	4 (3.0%)	0.89
Women with PIH should take additional medication	123 (91.1%)	3 (2.2%)	9 (6.7%)	0.91
Smoking cessation can help control PIH	99 (73.3%)	20 (14.8%)	16 (11.9%)	0.73
Weight monitoring can help control PIH	109 (80.7%)	26 (19.3%)	—	0.81
Women with PIH should monitor their blood pressure also after pregnancy	70 (51.9%)	36 (26.7%)	29 (21.5%)	0.52
When feeling abnormal symptoms, women with PIH should contact their doctor	133 (98.5%)	2 (1.5%)	—	0.99
		Total score /25	Mean (SD)	16.9 (3.1)

Results are given in frequency (percentage), and the total score is given in Mean (SD); SD: Standard deviation.

PIH: Pregnancy-Induced Hypertension

preterm birth (40%) and maternal or fetal mortality (23.7%). The patients had high individual scores for most attitude statements. Nevertheless, lower scores were reported for those related to the fact that HDPs can be prevented with good lifestyle habits (0.57) and that women with HDP should monitor

their blood pressure even after pregnancy (0.52).

Sixty-three patients (46.7%) had lower awareness of HDPs, and the rest ($n = 72$, 53.3%) had higher awareness. The association between the level of awareness and the baseline characteristics of the women is presented in

Table 4. Older women had significantly higher awareness scores than young patients ($P=.036$). Those working had higher awareness of HDPs (67.4%), whereas about half of nonworkers (53.9%) showed lower awareness scores ($P=.019$). Pregnant women who monitored their blood pressure during

TABLE 4

Association between pregnant women awareness of pregnancy-induced hypertension and their baseline characteristics

General characteristics		Lower awareness Total (N=63) Frequency (%)	Higher awareness Total (N=72) Frequency (%)	P-value
Age (years)	Mean (SD)	26.2 (4.7)	28.2 (5.6)	0.036
Area of residence	Urban area	35 (42.7%)	47 (57.3%)	0.248
	Rural area	28 (52.8%)	25 (47.2%)	
Level of education	Vocational degree	13 (37.1%)	22 (62.9%)	0.423
	High school or less	19 (50.0%)	19 (50.0%)	
	University or more	31 (50.0%)	31 (50.0%)	
Working status	Works	15 (32.6%)	31 (67.4%)	0.019
	Does not work	48 (53.9%)	41 (46.1%)	
Medical Insurance	Yes	49 (45.0%)	12 (46.2%)	0.414
	No	14 (53.8%)	60 (55.0%)	
Gestational Age (weeks)	Mean (SD)	21.5 (11.5)	21.8 (10.5)	0.884
Medical history		Frequency (%)		
First pregnancy	Yes	28 (45.9%)	33 (54.1%)	0.871
	No	35 (47.3%)	39 (52.7%)	
Abortion history	Yes	20 (50.0%)	20 (50.0%)	0.614
	No	43 (45.3%)	52 (54.7%)	
Family history of hypertension	Yes	35 (44.3%)	44 (55.7%)	0.513
	No	28 (50.0%)	28 (50.0%)	
Smoking status (before pregnancy)	Yes	4 (36.4%)	7 (63.6%)	0.475
	No	59 (47.6%)	65 (52.4%)	
Smoking status (during pregnancy)	Yes	3 (50.0%)	3 (50.0%)	0.867
	No	60 (46.5%)	69 (53.3%)	
Self-reported medication adherence	Yes	50 (45.9%)	59 (54.1%)	0.714
	No	12 (50.0%)	12 (50.0%)	
Blood pressure monitoring during pregnancy	Yes	37 (38.9%)	58 (61.1%)	0.006
	No	26 (65.0%)	14 (35.0%)	

Results are given in frequency (%: percentage) or Mean (SD: Standard Deviation). $P < .05$ is considered statistically significant.

pregnancy had significantly higher awareness of HDPs (61.1%) compared to those who did not (35.0%) ($P = .006$). The level of awareness was not statistically significantly varying according to the area of residence, level of education, gestational age, abortion and family history, smoking status, and self-reported adherence to medication ($P > .05$).

Discussion

This pilot study explored the knowledge and attitudes of 135 pregnant women

toward HDPs. A survey was developed and validated, leading to a short 25-item form to assess pregnant women's awareness at a later stage on a bigger sample size. Overall, moderate awareness was noted among patients with lower knowledge of some HDP complications. A high proportion of patients answered with "I don't Know" to many questions reflecting the need for interventions for patient education. Higher awareness scores were significantly associated with maternal age, working

status, and whether women monitored their blood pressure during pregnancy.

The mean gestational age of the participants was 21.7 (10.9) weeks. Research found that women pregnant for less than 37 weeks had higher odds of HDPs compared to others,³³ which increased the rationale for assessing their awareness. About 45% of women were pregnant for the first time, which may have limited their knowledge and practices compared to women with multiple pregnancies. Nonetheless,

29.6% had an abortion history, reported to increase 4.39 times more the odds of hypertensive disorders during pregnancy.³⁴ Most women visited their doctors regularly and 73.8% monitored their blood pressure only at the clinics. Although self-monitoring of hypertension was shown to be feasible and could help detect disorders earlier,³⁵ the above-mentioned behavior could be associated with poor awareness or lack of knowledge and resources. Women in the present study had moderate awareness of HDPs, but higher than that in other studies performed in low-income countries such as Ethiopia,³⁶ Nigeria,³⁷ Sudan,³⁸ and India.³⁹ This could be attributed to the earlier marriage age in these countries and the limited level of education. However, low knowledge of HDP complications was noted among participants. A recent qualitative study showed confusion between chronic hypertension and hypertension during pregnancy.⁴⁰ Recognizing these complications is crucial to clarify misconceptions and encourage good practices, particularly adherence to treatment and self-management of hypertension.⁴¹ Only half of the women in the present study agreed that HDPs could be managed through good lifestyle habits, in contrast to reports from the literature emphasizing the important role of diet and physical activity in reducing pregnancy-related diseases and fetal outcomes.⁴² Weight control, smoking cessation, stress reduction, and sleep quality promoted healthier pregnancies and lowered the risk of gestational complications.⁴³ A high proportion of women did not agree that hypertension management of pregnant women should be done even after pregnancy, in contrast to previous findings showing that women at risk of HDP had potentially higher risks of cardiovascular, kidney, and metabolic disorders after delivery.⁴⁴ Many women in this study answered with “I don’t know” to some questions related to HDP’s risk factors and complications. This finding highlights a lack of knowledge rather than misconceptions or misinformation, which supports the need to target women through educational programs

and informative interventions. Older women had significantly higher awareness of HDPs, which is in agreement with a cross-sectional study published in 2019.⁴⁵ This can possibly be related to the previous history of pregnancy and trials to conceive. Working women had higher awareness than others. Educational levels and working status also affected women’s knowledge, attitudes, and functioning regarding HDPs.⁴⁶ Monitoring blood pressure during pregnancy was significantly associated with higher awareness of HDPs. Good and preventive practices could have reflected this higher knowledge and emphasized the impact of awareness of HDPs and good practices. The developed short 25-item survey can be used in clinics before and during pregnancy to explore women’s awareness of HDP to promote its management and prevention of its complications. Accordingly, patient education campaigns can be tailored to increase women’s awareness.

Strengths and limitations

To our knowledge, this is the first study to assess the awareness of women about HDP using a validated score. A multicenter longitudinal study will be performed later to allow better external validity and representativeness of Lebanon and other similar settings. The 25-item survey can be used afterward as an initial tool to assess the corresponding needs, mainly in low-budget countries. Nevertheless, this study had limitations. A self-reported survey was used for data collection, which might have increased recall bias among patients. Statements were given equal scoring, which may not have reflected their individual importance. Selection and interviewer biases were reduced because data collectors were uniformly trained and did not interfere with the patient’s answers. Furthermore, data coding and analysis were performed by a different researcher, which minimized the subjectivity of data collectors. The sample size was relatively small but sufficient to validate the tool before its application on a bigger and more representative sample.

Conclusions

Pregnant women had moderate awareness of HDPs. Lower knowledge of some risk factors and complications could have been responsible for some misconceptions. Higher awareness was associated with older maternal age, among workers, and among those monitoring their blood pressure during pregnancy. The short 25-item tool developed in the present study can be used in obstetric clinics to explore the awareness of women of HDPs. Consequently, informed interventions and awareness campaigns can be developed. Overall, increasing awareness of HDP is crucial for the health and safety of expectant mothers and their babies. By recognizing the signs and symptoms of this condition and seeking early treatment, women can help to ensure a healthy pregnancy and delivery. Exploring the awareness of pregnant women can help detect those at risk to focus interventions, particularly in low-budget countries. Healthcare providers can accordingly educate their patients about the signs and symptoms of the condition and the importance of regular prenatal care. Expectant mothers should also be encouraged to monitor their blood pressure and report any changes to their healthcare provider. Moreover, resources such as educational materials, support groups, and online forums should be provided to expectant mothers and their families. ■

Supplementary materials

Supplementary material associated with this article can be found in the online version at [doi:10.1016/j.xagr.2023.100227](https://doi.org/10.1016/j.xagr.2023.100227).

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